

STRENGTH OF GEAR TEETH.

W = Load Transmitted in Pounds.
 S = Safe Fiber Stress.
 W' = Load carried by a Gear 1 Pitch (Diametral),
 1 Inch Face, Max. Fiber Stress 1000 Pounds.

f = Face in Inches
 P = Diametral Pitch.
 Formula, $W = \frac{S f W'}{1000 P}$

Speed of Teeth in Feet per Minute	100	200	300	600	900	1200	1800	2400
	or less							
S for Cast Iron	8000	6000	4800	4000	3000	2400	2000	1700
	10000	7500	6000	5000	3750	3000	2500	2125
	12000	9000	7200	6000	4500	3600	3000	2550
	16000	12000	9600	8000	6000	4800	4000	3400
S for Steel	20000	15000	12000	10000	7500	6000	5000	4250
	24000	18000	14400	12000	9000	7200	6000	5100

W' for 15° Involute Teeth

W'	No. of Teeth	W'	No. of Teeth
210	12	315	27
220	13	320	30
225	14	325	34
235	15	335	38
240	16	340	43
250	17	350	50
260	18	360	60
275	19	365	75
280	20	370	100
290	21	375	150
295	23	385	300
305	25	390	Rack

The higher values of S are close to the ultimate strength
 of Cast Iron, and are permissible only where the gears
 are not subject to shock.

SPROCKET WHEELS FOR ORDINARY LINK CHAINS.—III.

No. of Teeth = N	18	19	20	21	22	23	24	25	26	27	28	29	30
Angle α°	5°0'	4°44'22"	4°30'	4°17'14"	4°5'45"	3°54'78"	3°45'	3°36'	3°27'69"	3°20'	3°12'85"	3°6'18"	3°0'
d = size of chain	l = length of link	W = width of link	D = Pitch Diameter										
$\frac{3}{16}$ "	$1\frac{3}{8}$ "	$1\frac{5}{16}$ "	11.47	12.11	12.75	13.38	14.02	14.66	15.29	15.93	16.56	17.20	17.84
$\frac{1}{4}$ "	$1\frac{1}{2}$ "	1"	11.47	12.11	12.75	13.38	14.02	14.66	15.29	15.93	16.56	17.20	17.84
$\frac{5}{16}$ "	$1\frac{3}{4}$ "	$1\frac{1}{8}$ "	12.91	13.62	14.34	15.05	15.77	16.49	17.20	17.92	18.62	19.34	20.06
$\frac{3}{8}$ "	2"	$1\frac{3}{8}$ "	14.36	15.16	15.96	16.74	17.53	18.32	19.11	19.90	20.70	21.50	22.29
$\frac{7}{16}$ "	$2\frac{1}{4}$ "	$1\frac{9}{16}$ "	15.78	16.65	17.53	18.40	19.27	20.15	21.02	21.90	22.77	23.65	24.52
$\frac{1}{2}$ "	$2\frac{1}{2}$ "	$1\frac{3}{4}$ "	17.21	18.16	19.12	20.07	21.03	21.98	22.94	23.89	24.85	25.80	26.75
$\frac{9}{16}$ "	$2\frac{3}{4}$ "	$1\frac{5}{8}$ "	20.08	21.19	22.30	23.42	24.55	25.64	26.76	27.87	28.98	30.10	31.21
$\frac{5}{8}$ "	$3\frac{1}{4}$ "	$2\frac{1}{8}$ "	22.95	24.22	25.50	26.77	28.03	29.31	30.58	31.85	33.13	34.40	35.67
$\frac{11}{16}$ "	$3\frac{1}{2}$ "	$2\frac{5}{16}$ "	24.34	25.73	27.09	28.44	29.79	31.14	32.49	33.84	35.20	36.55	37.90
$\frac{3}{4}$ "	$3\frac{3}{4}$ "	$2\frac{1}{2}$ "	25.83	27.26	28.69	30.12	31.55	32.97	34.41	35.84	37.27	38.70	40.04
$1\frac{1}{16}$ "	4"	$2\frac{1}{6}$ "	27.26	28.77	30.28	31.79	33.30	34.81	36.32	37.83	39.34	40.85	
$\frac{7}{8}$ "	$4\frac{1}{4}$ "	3"	28.70	30.29	31.88	33.46	35.04	36.63	38.23	39.82	41.41		
$1\frac{1}{8}$ "	$4\frac{1}{2}$ "	$3\frac{1}{4}$ "	30.14	31.80	33.46	35.13	36.83	38.48	40.15				
1"	$4\frac{3}{4}$ "	$3\frac{1}{2}$ "	31.57	33.31	35.06	36.81	38.56	40.30					
$1\frac{1}{8}$ "	5"	$3\frac{3}{8}$ "	33.02	34.88	36.74	38.60	40.46						
$1\frac{1}{4}$ "	$5\frac{1}{2}$ "	$3\frac{7}{8}$ "	34.47	36.43	38.39	40.35							
$1\frac{3}{8}$ "	6"	$4\frac{1}{4}$ "	40.18										
$1\frac{1}{2}$ "	$6\frac{1}{2}$ "	$4\frac{3}{4}$ "											
$1\frac{5}{8}$ "	$7\frac{1}{4}$ "	$5\frac{1}{4}$ "											
$1\frac{3}{4}$ "	$7\frac{3}{8}$ "	$5\frac{3}{4}$ "											